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APPLIED MOBILITIES, 2018
https://doi.org/10.1080/23800127.2018.1435438

Virtual exchange-based mobilities: platform economy, exchange, and culture

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ABSTRACT

The development of a platform economy is generating new ways of virtual exchange-based mobilities. This economy is based on the use of digital media by networked individuals, the Internet of Things and digital platforms. The characteristics of the platform economy are informed by new imaginations of mobility that are shaped by dynamic circuits of data and connectivity as well as economic and cultural desires to find new ways to distribute and use resources. Access to – and distribution of – goods and services are digitally enabled and are encountered virtually via platforms that materialize in economic and social activities. The platform economy is a new feature of mobility in that it connects and mobilizes products, services, people and data in virtually enabled exchange relationships. This paper addresses digital platforms and networked individuals as they combine to create different experiences of exchange that include transaction-based practices as well as sharing arrangements. A feature of the platform environment is its ethos of "exchange within mobility", which materializes in two main ways: (a) as an economy of transactions and (b) as a culture of sharing. The rise of virtual exchange-based mobilities is crafted out of the social relations of digital platforms as they interact with cultures of social life and digitized imaginations, which is resulting in various types of exchange relationships.

ARTICLE HISTORY
Received 17 September 2017
Accepted 30 January 2018

KEYWORDS
Platform economy; Internet; sharing; exchange; virtual

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1. Introduction

The development of a platform economy is generating virtual exchange-based mobilities. In this paper, the term "virtual exchange-based mobilities" refers to the access and distribution of goods and services via digital platforms. The platform economy generates a particular experience of virtual mobility due to the way it organizes the transaction and sharing of resources. This differs from the more informal practices of virtual mobilities found in the use of social media to share things like travel and holiday experiences or family events. This paper addresses digital platforms and networked individuals as they combine to create virtual exchange-based mobilities within a platform economy. A feature of the platform environment – its ethos of "exchange within mobility". This ethos materializes in two main ways: (a) as an economy of transactions, and (b) as a culture of sharing. The paper argues that the

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cultures of exchange shape the distinctiveness of virtual mobilities in a platform economy – in the forms of transactions and through sharing.

In Section 2, the paper outlines mobilities and the platform economy, and Section 3 describes the platform economy and discusses how it features in economic life. Section 4 considers the meaning of exchange, transactions and sharing within the platform economy. Section 5 addresses the imaginative sensibility of sharing and transactions, which are social and inform the reflexive development of virtual exchange-based mobilities. Section 6 addresses the social relations of virtual exchange-based mobilities anchored in digital platforms. The meaning of these mobilities interacts with the ethos of the platform economy, which requires a consideration of social and cultural life that grounds virtual exchange and mobilities. Section 7 discusses how the social relations of sharing and, to a lesser degree, transactions, create a stickiness to virtual mobilities that acts as a check to purely abstract exchange-based mobilities. The paper concludes with Section 8, which argues that the cultures of exchange are influential in shaping the platform economy.

2. Mobilities and the platform economy

As far back as 1994, John Urry and Scott Lash noted the development of a mobile and reflexive society involving economies of signs (e.g. information, symbols, images) that interact in space. These spaces are where signs and social subjects (such as workers, refugees, financiers and tourists) are mobile over greater distances at greater speed. Urry (2000) observes the physical movement and virtual movement of people, ideas, images, messages, waste products and money across borders that define contemporary society. The subsequent development of digital platforms and the digital economy extends this observation, since they enable new modes of material and non-material mobilities. This economy facilitates virtually enabled transactions and sharing arrangements that connect and mobilize objects and people. The platform economy is *establishing patterns of virtual exchange-based mobilities*, which makes it distinctive from the more informal instances of virtual mobilities such as "flashpacking" (Molz and Paris 2015) and imaginative forms of travel (Clayton et al. 2017). AQ3

The mobility of the platform economy at one level creates a sense of frictionless communication, movement and exchange (Caletrío 2012). However, although mobility *appears* frictionless and everything can be linked and coordinated, there is an underlying technology and a set of social relations that facilitate the experience of mobility through a digital platform. This raises the issue of the social relations of platform economy and the role of movement in ordering – and defining the quality – of social relations. Urry (2007) argues that distance is a feature of mobilities and that mobility is negotiated within social relations. The quality of social relations in digitally mediated mobilities is shaped by socio-technical affordances and human–technical relationships. To consider mobility in the platform economy therefore involves addressing distance, the culture of exchange and the configuration of digital networks and social networks (Aouragh 2011). Distance is often discussed in terms of presence and absence in various types of mobilities, including multi-local experiences (Tully and Alfaraz 2017), sharing cultural rituals virtually when people are forced apart (Auuragh 2017), and experiencing a birthday party at a distance (Clayton et al. 2017). AQ4 Distance, however, also involves understanding respect between people in mediated and situated contexts (Silverstone 2006). Transactional exchanges and sharing arrangements

each have a different ethos of how distance is negotiated and understood and these, in part, define the experiences of virtual exchange-based mobilities.

3. Platform economy

Digital platforms form the base of increasing numbers of exchange-based activities. The use of digital platforms spans the marketplace, social and cultural activities and political activity. Kenny and Zysman (2016) compare the proliferation of platforms with the factories of the Industrial Revolution, in that factories were the organizational form of industrial economy and digital platforms are the organizational form of the digital economy and society. The reach and power of platforms is widespread and significant because there are many millions of users who use smart mobile devices to connect to cloud-based applications (apps) and services. The data from these connections can support innovations by creating feedback loops within a networked ecosystem. The platform economy supports services and social networking, for instance social sites like Facebook and LinkedIn, or urban transportation services including Uber, Lyft and Sidecar.

There are two underpinning computational factors of a platform economy – algorithms and cloud computing. Algorithms operate on raw data to covert computing power into economic tools. They work when it is possible to convert certain aspects of activities into formalized and codified processes with clearly defined rules in order to operationalize tasks. There is a layer of software that links with the economy through a fabric of algorithms. When this software layer and algorithmic fabric are linked to services, products and work processes, they become the Internet of Things, which includes webs of sensor networks. The software layer extends the availability and lowers the cost of access to tools (digital and non-digital tools accessed via digital means). Cloud computing provides shared computer processing resources and data to computers and other digital devices. It enables ubiquitous and on-demand access to a shared pool of configurable computing resources such as computer networks, servers, storage, applications and services (https://cyberparse.co.uk/tag/cloud/page/234/).

Digital platforms, based on algorithms and cloud computing, feature in the restructuring of the economy. The networking logic that underpins the way they function and the way they are used is that they connect networks by creating a network of networks. The platforms and their networking logic are disrupting the existing organization of economic activity. Kenny and Zysman (2016) argue that these platforms are resetting entry barriers into value chains and changing the logic of value creation, as well as reorganizing and repackaging work.

The platform economy is also blurring established economic sectors, as illustrated through smartphones. Smartphone have a range of functions and link into a variety of services and networks so can be used as a camera, map, booking device and much more. Despite this sectoral blurring, it is nonetheless possible to identify some contexts of the platform economy and functions (Kenny and Zysman 2015). This provides insights into the platform environment and, in so doing, illustrates the characteristics of mobility in this economy. Kenny and Zysman (2015) identify seven areas of activity in the platform economy:

(a) Platforms for platforms.
(b) Platforms for mediating work.

(c) Platforms making tools available online.
(d) Platforms of electronic goods markets for retail and business.
(e) Platforms for transforming service industries.
(f) Platforms that act as intermediaries in finance.
(g) Platforms that facilitate social and political organization, including workers' organizations (Kenny and Zysman 2015).

The Internet is the foundation of (a) platforms for platforms because of its networked architecture (Castells 2001). There are a number of businesses that provide the infrastructure and tools for this platform of platforms. For instance, Amazon Web Services facilitate the construction of cloud services and provide the tools that enable the building of – and linking with – other platforms (Kenny and Zysman 2016).

The other areas of platforms focus on particular services or bundles of services (Kenny and Zysman 2016). For example, (b) platforms for mediating work, which might function as electronic "headhunters" and automated Human Resource (HR) departments. There are several versions of this platform within two main categories: one is "globally biddable work" such as Upwork, Innocentives and Amazon Mechanical Turk, and the other is "occasional informal work" which is facilitated by apps such as Task Rabbit, Handy and Homejoy (Kenny and Zysman 2016). In the area of automated HR, Zenefits, Job Rooster, and Wonolo provide diverse HR functions. Each of these work for different types of organizations, with Zenefits providing an online marketplace of HR tools free to small businesses. Other versions of platforms are those that make tools available online, for example (c) platforms making tools available online. People can access a repository of open source software programs via the Github platform, for example (Kenny and Zysman 2015), which dramatically reduces the cost of software tools and business building blocks. There are numerous platforms in the (d) electronic goods markets for retail and business. Examples include virtual markets for physical goods such as Etsy and eBay. Amazon and company-specific apps are further examples of retail sales platforms, which include Apple and Android "stores" that facilitate the diffusion of various media content and services (Kenny and Zysman 2016).

Kenny and Zysman (2015) continue their list by noting that numerous platforms seek to transform the (e) service industries – two well-known examples of this are Airbnb and Uber. These platforms work by converting consumer goods into investment goods, as seen in the way that Uber connects drivers with customers algorithmically and treats drivers as contractors. Another platform economy activity is taking the place of (f) intermediaries in the financial sector. Here, platforms such as Kickstarter or Indiegogo focus on project funding, replacing traditional intermediaries and business models in this area (Kenny and Zysman 2015). Other platforms that are displacing traditional financial institutions include AngelsList for venture capital and Zopa or Rate Setter which support peer-to-peer lending (Kenny and Zysman 2015). Examples of platforms that (g) facilitate social and political organizations include TaskRabbit and Handy, which connect workers with customers in new ways (Kenny and Zysman 2015). Uber is also part of this as is Airbnb. These formalize less organized and locally based working which maintains a level of flexibility (Kenny and Zysman 2015). This type of arrangement is useful for some people as it allows them to use a casualized work arrangement to meet their specific needs. However, these platforms are also displacing and threatening existing regulated forms of work such as taxi driving and hotel service roles. Other platforms, such as app stores and YouTube, have created new occupations and

occupational branches (Kenny and Zysman 2016). They involve an array of community and self-organizing groups as well as worker groups (see the discussion about Rushey Green Timebank and Brockley Society below).

The use of platforms is part of the networking of virtual exchange-based mobilities. The use of networked digital technology is essential for this, and the interface of these mobilities needs to be accessible, in some cases this extends to being multimodal (Castells 2012). Multimodal systems enable users to interact with each other and the system through input modalities and to access information through output modalities such as speech synthesis, smart graphics and other modalities that are configured from the context at hand (Jonaitis 2016). Multimodal systems recognize inputs from the different modalities and combine them so that they are open for interpretations that facilitate multimodal access to mobilities (Caschera 2007).

The reach and diversity of these types of platforms in commercial and social organizations and networks is significant. Platforms are part of the circulation of goods, services, data and people in a range of networks and between networks. Although there has been an increase in the mobility of things and people since the 1980s, the development and use of the platform economy is yielding new forms of mobility and new experiences of mobility.

4. Platform economy and sharing culture

Mobilities facilitated through the platform economy focus on new ways of using resources. The narrative that surrounds the platform economy is that it supports new ways of accessing and distributing resources. These include transaction platforms, innovation platforms, integrated platforms and investment platforms (Evans and Gawer 2016). The dominant discourse is about "sharing", which is economic in character and refers to activities such as collaborative consumption and sharing in a peer economy (Botsman and Zoo 2010). There are, however, AQ5 questions about the use of the term "sharing", with some arguments that cultures of sharing must be distinguished from a sharing economy (Light and Clodagh 2015). This means that people use platforms for economic exchange, which differ from more altruistic community-based cultures of sharing. This differentiation starts to expose the distinctive characteristics of what virtual exchange-based mobilities might mean for different people and networks.

Botsman (2013) sees platform-based exchange in economic terms, arguing that it is a model based on sharing underutilized assets for monetary or non-monetary benefits. It can be used in peer-to-peer (P2P) marketplaces as well as in business to customer markets. This economic model is also known as the P2P economy (Botsman and Rogers 2010), the collaborative economy, or the mesh (Gansky 2010). Allied to this model is the notion of collaborative consumption, which is defined as "peer-to-peer-based activity of obtaining, giving or sharing the access to goods and services, coordinated through community-based online services" (Hamari, Sjoklint, and Ukkonen 2015, 3). Botsman and Rogers (2010) identify three types of collaborative consumption systems:

- Product service systems, which provide collaborative (non-ownership) usage of products (e.g. car sharing).
- Redistribution markets, which provide redistribution (and re-use) of pre-owned products through swapping and exchange.

- Collaborative lifestyles, where people with similar interests share and exchange less tangible assets such as skills, time and money (e.g. P2P lending, crowdfunding) as well as access to idle capacity (Botsman and Rogers 2010).

There are different kinds of relationships within the above scenarios. For example, there are collaborative consumption schemes centred on owners who have shared resources, and there are service systems where businesses own the shared resources of consumers (Botsman and Rogers 2010). There are also P2P schemes which enable direct encounters between peer provider and peer consumer to share resources such as accommodation. Albinsson and Perera (2012) argue that collaborative consumption need not involve monetary exchanges, since it also involves bartering and sharing amongst networked individuals. However, Belk (2014) suggests that the sharing economy generally involves sharing resources for a fee or other compensation. AQ6

Benkler (2004) makes a nuanced assessment of sharing and transactions. He distinguishes between the mechanisms of secondary markets and social sharing systems, which are alternative transactional frameworks which make it possible to dispose of excess capacity. He asserts that selling spare capacity, such as finding a secondary market for an unused room, car or used goods, is not the same as sharing it (Benkler 2004). This argument highlights the difference between market exchange and the processes that happen in a less transactional way in the practices of mutual help and support. There is, therefore, a tension within the discourse of sharing when it is talked about in terms of a marketplace, because it does not align to a more altruistic understanding of sharing.

Light and Clodagh (2015) address this tension by asking if it is possible to talk about sharing and economy in the same context. To examine this, they undertook research into a crowdfunding business and a range of community-based sharing initiatives that use digital platforms. One example they discuss is Patchworkpresent.com, which is an online small independent business with a shop in Brockley, South London (UK).

The purpose of Patchworkpresent.com is to help groups of individuals buy a single collective present. These presents can include one present or one piece of a present. The initiative works by dividing the presents into manageably priced "pieces", so that people can buy one part of a bigger present. The underlying ethos is that this enables friends and family to collaborate to buy a present that is really wanted but which each individual could not afford to buy on their own. Furthermore, the platform also allows the presents' recipients to send "thank you" tokens such as photos of a person enjoying the present. The service levies 3%, which is a lower percentage charge than crowdfunding platforms such as Kickstarter and Just Giving. The manager sets her prices in relation to a perceived market rather than immediate profit, and she works with the aim of enabling people to club together to get things for friends and family. The owner notes that there is an emotional benefit to her business in that it involves a "balance between what's being paid for and the benefit of paying for a service that makes that financial transaction more fun and interesting and real and personal" (in Light and Clodagh 2015, 53). The owner feels that it is important to be based in the community of her London borough because, even if she uses online tools and platforms, an active local community is supporting her initiative – both online and in the physical shop.

Other initiatives are more communal and based on more altruistic senses of sharing. These differ from those based on an economic transactional relationship, whether

profit-focused companies such as Uber or personalized independent businesses such as Patchwork Presents. Light and Clodagh (2015) found a range of sharing initiatives in the same borough as Patchwork Presents. Two of the six[1] use platforms as well as face-to-face, print and social media-based communication. These are Rushey Green Timebank and Brockley Society (a conservation organization). The time bank works alongside a doctors' surgery and it enables people to donate an hour of their time to someone and then claim an hour back from someone else. The doctors who set up the time bank thought it would help people to build esteem and motivation and, thus, contribute to well-being at both the personal level and the community level. The number of participants has grown rapidly and it is now working as a distributed model across five hubs in the London Borough of Brockley.

Light and Clodagh's (2015) second case, the Brockley Society, monitors planning applications, produces free printed newsletters, supports a community garden, holds garden rummage sales and runs a group of tree wardens. The people involved share various tasks to keep the Brockley Society running to look after their area. They use platforms (type (g) on pages 3 and 4 of this article) to help them manage the organization and work out how best to use their resources, including the ways people offer to share doing work and tasks for free. These examples illustrate a culture of sharing which is characterized by contributing to a shared endeavour. There is no sense of economic transaction in these relations because people do not expect anything in return for their contributions. The participants may well enjoy sharing, but that enjoyment is altruistic rather for than economic gain and/or bartering in a transaction of goods or services.

Light and Clodagh (2015) identify a social and cultural aspect of sharing that differs from economic or resource transactions. Their research findings support Benkler's (2004) argument that sharing relies on "tacit, learned, and culturally reproduced capacities to read and interpret social settings, communicating information with great subtlety and nuance" (Benkler 2004, 315). Light and Clodagh (2015) draw out the way that the meaning of a sharing culture is seen as an **a**lternative to private and individualistic ownership. This illustrates a point made by Belk (2007), that sharing is an "alternative to the private ownership that is emphasized in both marketplace exchange and gift giving" (Belk 2007, 127). He continues by arguing that, through sharing, two or more people may enjoy the benefits (or costs) that flow from possessing a thing. He points out that the organization of sharing is varied and may include voluntary lending, the pooling and allocation of resources, and authorized use of public property. He asserts that it does not include contractual renting, leasing or unauthorized use of property by theft or trespass. Another distinction is that economic activity avoids feelings of commitment whereas sharing promotes it, with the potential for lingering indebtedness and residual feelings of friendship (Belk 2007). The meaning of sharing therefore has a different meaning to that of transactions.

This meaning leads on to a range of questions about the construction of a digitally supported imagination. This is a socio-cultural entity which is based on the various kinds of platforms as well as types of sharing, transaction and exchange. Networked individuals, data, objects and the Internet of Things all feature in socially shaping and creating transactional culture and cultures of sharing. This raises questions about how imaginative sensibilities create virtual exchange-based mobilities.

5. Imaginations of virtual exchange-based mobilities

Virtual exchange-based mobility involves a specific type of imagination. People live in a world with technologies of circuits and relays, which means that various types of virtual mobilities are imagined culturally, identified cognitively and "hard-wired" into digital platforms (Blom, Lundemo, and Rossaak 2016). Circulation also involves technologies that can store and contain data. There is a belief that high levels of data can be stored as memory, measured and seen in numbers such as megabytes, gigabytes, terabytes and petabytes. However, it is important to note that digital technologies do not actually store anything except code. Therefore, if someone forgets to update the software that ensures their encoded material is visible, it will become invisible at the cultural interface (Blom, Lundemo, and Rossaak 2016). The information is material but access to it is digital. Digitization stores code and facilitates searches that make materials more or less instantaneously available. Although digitization is potentially revolutionary because, in theory, everything could belong to everyone, its organization as an economy limits access to those who can afford to pay for access, which undermines its radical potential (Blom, Lundemo, and Rossaak 2016).

There is an analogy between digitization and archives that goes beyond subscription and access. Traditionally, archives have been described in terms of principles of ordering, however, Ernst (2013) argues that archives are now understood through concepts such as "fields" and "dynamics". He observes that digital archives do not separate documents and contents from their archival infrastructures. Digital archives are based on their networked data circulation, and their forms are comprised of code, protocol layers, electronic circuits and data flow. Archival data has always had a circulation aspect, as it serves to mobilize documents for a range of inquiries. However, in networked digital archives, the circulation becomes a feedback circuit whose material structure is that of vectorial dynamics and electromagnetic fields (Ernst 2013). A consequence of this, as Chun (2011) observes, is that software enables some sense and logic of permanence that conflates memory with storage, the ephemeral with the enduring. Memory in terms of computing memory is an activity that is virtual as well as actual, and its images are electronic events.

The rise of digital circuits is ontologically challenging because it raises questions about the "social". Ontologically, the social requires reflexivity because, in order for society to exist, it needs a self-image and a memory. The sharing of images and imaginations of the present and the past feature in collective memory and collective self-images which enable a society to be knowable (Halbwachs 1992). This raises questions about reflexivity and society because, if the digital networks of memory lack stability and durability to confer identity on things, this may undermine the way a society and an economy is knowable. Therefore, in ontological and epistemological terms, this raises questions about how a society can be known if its image is the object of instantaneous erasure, dispersal through multiple relays or information overflow, or dynamically transmutated through feedback circuits. In concrete terms, for example, this means asking if a world of virtual exchange-based mobilities of relays, updates, negotiations and associations can be archived (Blom, Lundemo, and Rossaak 2016). This conundrum is of concern for virtual exchange-based mobility because it highlights the issue of where connectivity starts and ends within a digital receive-and-return movement of techniques of association (Lazzarato 2007). In mobilities of flows and circuits, individuals have to know where they enter the mobility and where they leave it, which requires notification systems around specific access points and routes within mobility. Multimodal interfaces

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address this issue because they create cultural markers to guide individuals through virtual exchange-based mobilities.

Multimodal interfaces can support individuals to discover new types of association and resources. Here, Lazzarato (2007) argues that people and digital technologies are equally social in that they are connective. Lazzarato's (2007) approach is consistent with media archaeology, where the relations between various types of "internal" or "external" machines become visible. This does not imply that humans are like digital networks or that the operations of computing resemble those of human cognition. To speak of the social character of cognition and information technologies does not infer that there is an identity and a link between them. Instead, it suggests that they both have a general capacity for the production of time/difference that is the technical basis for all forms of association or aggregation. This, by extension, affects the understanding of the social nature of the institutions, languages, artwork, and – the focus of this paper – mobilities and exchange. However, Lazzaroto (2007) does not fully address the social relations of these human-technical connections, which is important because the social relations of mobility create and shape virtual exchange-based mobilities.

6. Social relations of virtual exchange-based mobilities: platforms, networks, networked individuals and the Internet of Things

Castells (2001) argues that the development of the Internet, and its social appropriation and use, has resulted in networked organizations of business, capital and firms. Castells (2001) identifies that the digitally supported network is the organizational form of digital society. The development of the Internet from Web 1.0 to Web 2.0 has extended its networking logic into a network of networks. This refers to the way that networks link with other networks, which is how platforms work in the platform economy. This, in effect, adds value and power, by linking the programming of single networks with other networks and switching between different networks. Network programmers and switchers can utilize and further enrich the resources of a network through linking and switching network capacity (Castells 2009). This means that products, services, people and data can be mobilized within and across networks to produce a new logic of mobility through the platform economy. This new logic is not just at a system level because it involves the connection with – and mobility of – individuals and things.

Two aspects of digitally facilitated networks and virtual exchange-based mobilities are networked individualism and the Internet of Things. A distinguishing feature of the digital age is the rise of networked individualism (Wellman and Haythornthewaite 2001). The Internet reached its Second Age around 2000 when it became part of everyday life in the Global North. During this period, Wellman and Haythornthewaite (2001) observed that the individual became a node of connectivity within a range of social and digital networks, since individuals now create connections as well as managing those connections digitally and socially. The transition is one from individuals being part of a group with everyone in their own place to that of networks involving unfettered mobility of people and goods (Wessels 2010). Broader social change has also ushered in more individualized, personalized and fragmented forms of social life with friends, family, work and cultural life becoming increasingly geographically dispersed. In this context, individuals use transport systems, communications and media to sustain ties.

The platform economy serves these mobilities. Patterns of connection are socio-technical and they combine to act as a network. However, in their everyday and social life, individuals ground these networks and give them meaning. This also makes mobilities meaningful (Wessels 2012), and the human and cultural aspects of virtual exchange-based mobility distinguish the meaning of mobility in social terms from those that focus on the technology of digital systems in mobilities. It is important to recognize the cultural aspect of platforms and of mobility because, otherwise, there is a danger that individuals will just be seen as free-floating data subjects and mobility as context-free, abstract circulation (Wessels 2012). Although there are aspects of data subjects within systems, the *use* of digital systems sustains the sociality of digital technologies and services (cf. Hannam, Sheller, and Urry 2006). This happens because people integrate the online and offline in their everyday lives to shape their meanings of virtual exchange-based mobilities – and, in so doing, they tame the technology, so that it works for their own particular purposes. However, the technology also features and acts in virtual exchange-based mobilities through the relationship between the platform economy and the Internet of Things.

This is a relationship that intersects with networked individuals, connects data and underpins mobilities across the platform economy. The Internet of Things networks together electronic devices, from light bulbs and water metres to smartphones and Netflix (Vermesan and Friess 2013). These devices provide information, record information about users, and circulate information within networks of networks. These networks create ecologies between the Internet and products of all types. For example, Apple, Google and Microsoft are buying companies that build everyday objects with chips in them. The chips link data sources in objects to control panels in, for example, iTunes, Android or Windows. The advantages of the Internet of Things are that it makes device fully interoperable, which gives individuals – as consumers and citizens – the ability to migrate between platforms (Howard 2015). However, as Howard (2015) also observes, the disadvantage is that consumers do not control their data that is captured by their devices and then fed into various networks. This means that individuals do not know how data about them is used, and there is a risk that data is being used without the fully informed consent of consumers.

Thus, although the social relations of platforms are shaping the characteristics of the platform economy (as discussed in Sections 2–4), other social relations are also configuring and shaping virtual exchange-based mobilities. These are the social relations of networked individuals and the Internet of Things, which are interacting with the platform economy to produce virtual exchange-based mobilities.

7. Stickiness within virtual exchange-based mobilities: culture and proper distance

This discussion has shown how the platform economy enables virtual exchange-based mobilities. The characteristics of virtual exchange-based mobility in the platform economy include connecting digitally, creating associations through platforms, and exchanging – either on a transactional basis or through a culture of sharing. Virtual exchange-based mobilities are organized through the social relations of networks of networks in which people, services, products and information connect in order to use and distribute resources in new ways. They do this for diverse motivations, including the need or desire to share scarce resources, to turn underused resources into assets and socially share community resources to meet

human and social needs in a respectful way. Other motivations are more economically driven and seek to capture profit from platform-based services, such as Uber and Deliveroo. These new models of a "gig economy" (Greenwood, Burtch, and Carnahan 2017) are having both positive and negative social impacts, such as offering them flexibility of working hours and location, but reducing their employment rights and therefore increasing their vulnerability (Kenny and Zysman 2016).

The mobilities within these relationships involves the imagined "other" – whether a person, a product, a service or data and information. Computers facilitate these mobilities, existing in circuits of data that are encoded and managed by algorithms. These platforms connect people, bringing them together to manage their own resources. There is, therefore, a moral dimension within the platform economy because it involves the ways people interact with each other as well as how they decide to use resources such as data, products and services. Silverstone (2006) raises the point of morality within mediated relations, in line with Urry's (2007) later observation that distance is significant in shaping the character of social relations within virtual communication and mobility. This includes whether the platform economy will support the equal sharing of resources to foster wellbeing and equality, or whether it will create limited casual employment and increased inequality (see the "gig economy" point above). These types of moral issues are embedded in the purposes and imaginations of those connecting through the platform economy and the relationships between people in transactional or sharing networks.

A further aspect is that the mobilities of the platform economy relates to privacy amongst subjects, objects and data generated through the Internet of Things and networked individuals. These are part of the circuits of virtual exchange-based mobilities and this raises issues about how to protect individuals' privacy, ensure the responsible use of data and manage the provenance of objects. Data is mobile across platforms and networks of what Howard (2015) calls an "empire of devices". Howard (2015) argues that the design of code should be informed by democratic values so that connected devices can provide a list of potential "beneficiaries" of the data. He suggests that smart devices should relay data across the network to other organizations to pull down a list of the corporate, government and civic entities that use the data generated via those devices and networks. Howard (2015) expands his argument to include more bottom-up approaches to monitoring data use. He points out that "digital clans" could offer one way to organize a social response to address some of the moral issues around data use and data privacy. He envisages these clans will be larger than families but still have tight bonds of trust and reciprocity and that they will use the Internet to manage extended networks. If digital clans develop, they may well be the communities that individuals trust with data and data monitoring.

Considering morality within virtual exchange-based mobilities centres on the notion of distance. The moral issues of virtual exchange-based mobilities relates to Urry's (2007) concern about the effect of distance in mobilities. The idea of "proper distance" highlights how distance features in virtual exchange-based mobilities in terms of how exchange is "shared" or is undertaken in a more "transactional" way. Proper distance refers to the degree of proximity required to mediate relationships in order to create and sustain a sense of the "other" that is sufficient for reciprocity and for the exercise of duty of care, obligation, responsibility and understanding. There is proper distance in mediated communication if it maintains a sense of "other" through difference as well as through shared identity. Hence, proper distance is a prerequisite for, and a part of, plurality. Silverstone (2006) argues that: "proper distance

involves imagination, understanding and duty of care and involves an epistemological (Arendt) and an ontological (Levinas) commitment to finding the space to express what is experienced (Arendt) and essential (Levinas) in our relationships to the other" (Silverstone 2006, 47). Silverstone (2006) focuses on the media environment in broad terms, and the platform economy as something that is digitally mediated and virtually shared and which fits into this environment.

The distance experienced in some parts of the platform economy is transactional and, in that context, value comprises the use of resources to maximize assets. This means that there is not necessarily a deep sense of shared values or a great deal of knowledge and empathy with the other. Distance in sharing arrangements that use digital platforms is different because it is associative, and shared values underpin deeper understandings of, and respect for, others. Currently, what denotes proper distance in the platform economy is under-researched, however, as Light and Clodagh (2015) show, organizations such as the Brockley Society that use platforms have strong senses of respect for the community and environment and are thus practicing "proper distance". People learn to use platforms and decide how to engage in the platform economy through culture. This point highlights the role of society as a basis for reflexivity, whereby individuals understand the meaning of "sharing" and "transaction" through their culture and social practices (Light and Clodagh 2015).

This point raises questions about the relationship between platform-based mobilities and the lived realities of mobilities. To a large degree, the platform economy aligns with changes in technology and knowledge that define a "third modernity" (Lash 1999). Lash (1999) sees the object and its circulation as a key dynamic in a digital and global information culture. This culture is one in which humans, objects and texts become entities in networked assemblages. Here, a second form of modernity exists in community, history, place, nature and in the language of modernity. Lash recognizes that circuits of digital code do not exist without the culture of "second modernity" and they require a standpoint from which to operate. For Lash (1999), the principles of the Enlightenment create the basis for reflective judgement that informs a reflexive modernity, while community, history, place and nature all act as index and memory in a global information culture of platform-enabled mobilities.

There is a relationship between grounding virtual mobilities and recognizing that virtual mobilities are also abstracted and groundless. Aspects of this second modernity are present as raw material as a de facto position or as a resource in a platform economy of mobilities. Second modernity also serves as memory in society, which helps individuals to locate themselves within their own context, to position themselves within mobilities, and within the social relations of their mobility. Social life embeds the platform economy contextually in culture and contextually in flows of circulation. In virtual exchange-based mobilities, the culture of second modernity acts as index that contributes to the "stickiness" within mobilities. This means how digitally enabled platforms are made meaningful through the language and sensibilities of second modernity. Individuals interpret the meaning of sharing virtually and transacting virtually within the purposes of mobility. They integrate their uses of the platform economy in relation to which resources they need and desire, and they consider culturally and morally how to transact and share in virtual exchange-based mobilities. Thus, the stickiness of culture acts as an index of second modernity to create a sharing culture on the one hand and economic transactions on the other hand, within the platform economy.

8. Conclusion: virtual exchange-based mobilities

Virtual exchange-based mobilities are becoming increasingly common through the platform economy. These mobilities are supported by digital platforms, their attendant algorithms and cloud computing. Platforms based on the Internet and its networked architecture has enabled the development of a network of networks. The logic of this type of networking is that it facilitates connections between resources and people, and the platform economy utilizes this to distribute, share, transact and exchange resources. The platforms, and those who use them, are part of a socio-digital networked organization of the transaction and sharing of products, services, data and people. There is, therefore, a network of mobilities embedded with a network of networks. Platforms are the mechanism which supports these mobilities. These virtual exchange-based mobilities are comprised of networks of sharing and transaction that seek to add value to resources. They are an extension of commercial exchanges and of non-profit making communal activities.

There are a wide range of transactional and sharing mobilities. Economic interest, social values and cultural mores inform these mobilities. Although the platform economy is a virtual circuit of data, it is shaped by the way it is used, and is utilized by, networked individuals. The ways that individuals engage in digital networks are influenced by the way that culture informs their sensibilities. In engaging with the platform economy, individuals draw on culture and the language of the second modernity to assess the meaning of sharing versus the meaning of transaction. The relationship between virtual engagement via platforms and the lived practicalities of accessing resources becomes meaningful through a reflexive engagement with the social values embedded within Enlightenment philosophy and the cultural mores of community and place which are accessed through social engagement and memory.

The imaginative turn here is at once digital and social, involving the matter of mobilities – i.e. resources, humans, computers and culture. The social and digital are articulated through the social relations of virtual exchange-based mobilities. These create new forms of exchange which are shaped by individual and cultural sensibilities. These sensibilities also create a "stickiness" in virtual exchange-based mobilities – a stickiness that, on the one hand, limits potential for the sharing economy to usher in new progressive forms of distribution whilst, on the other hand, reduces the potential risk of transactions that have little moral direction within the social relations of exchange. In summary, social relations shape virtual exchange-based mobilities, thus generating mobilities that are inherently digital and social – and both are therefore writ with the contradictions of economic and social life.

Note

1. The other four examples are the Micro library, Mensheds workshop space, The Ivy House community-asset pub and the Breakspears Mews Community Garden.

Disclosure statement

No potential conflict of interest was reported by the author. AQ8

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